

ABSTRACT

[00085] The invention provides methods for analyzing the protein content of a biological sample, for example to obtain a protein profile of a sample provided by a particular individual. The proteins and protein fragments in the sample are separated on the basis of chemical and/or physical properties and maintained in a separated state at discrete locations on a solid substrate or within a stream of flowing liquid. Raman spectra are then detected as produced by the separated proteins or fragments at the discrete locations such that a spectrum from a discrete location provides information about the structure or identity of one or more particular proteins or fragments at the discrete location. The proteins or fragments at discrete locations can be coated with a metal, such as gold or silver, and/or the separated proteins can be contacted with a chemical enhancer to provide SERS spectra. Method and kits for practicing the invention are also provided.